

maximally 0.15 wt. % iron (Fe);  
3.5 – 4.5 wt. % copper (Cu);  
0.1 – 0.5 wt. % manganese (Mn);  
0.3 – 0.8 wt. % magnesium (Mg);  
0.05 – 0.15 wt. % titanium (Ti);  
0.1 – 0.25 wt. % zirconium (Zr);  
0.3 – 0.7 wt. % silver (Ag);  
maximally 0.05 wt. % other, individually;  
maximally 0.15 wt. % other, total; and  
remaining wt. % aluminum (Al).

16. (new) The alloy as claimed in claim 15, wherein the ratio of copper to magnesium is between 5 and 9.5.

17. (new) The alloy as claimed in claim 16, wherein the copper content is 3.8 - 4.2 wt. % and the magnesium content 0.45 - 0.6 wt. % and the copper to magnesium ratio is between 6.3 and 9.3.

18. (new) The alloy as claimed in one of claims 15 to 17, wherein the silver content is 0.45 – 0.6 wt. %.

19. (new) The alloy as claimed in one of claims 15 to 17, wherein the silicon content is 0.4 - 0.6 wt. %.

20. (new) The alloy as claimed in one of claims 15 to 17, wherein the manganese content is 0.2 – 0.4 wt. %.

21. (new) The alloy as claimed in one of claims 15 to 17, wherein the zirconium content is 0.14 – 0.20 wt. %.

22. (new) The alloy as claimed in one of claims 15 to 17, wherein the titanium content is 0.10 – 0.15 wt. %.

23. (new) The alloy as claimed in one of claims 15 to 17, wherein the titanium component for the production of the alloy is alloyed into it in the form of an Al/Ti/B prealloy and the boron fraction is 0.01-0.03 wt. %.

24. (new) The alloy as claimed in one of claims 15 to 17, wherein the iron content of the alloy is maximally 0.10 wt. %.

25. (new) A semi-finished product produced from an alloy as claimed in one of claims 15 to 17, wherein the semi-finished product is produced by a hot working process.

26. (new) A method for the production of a semi-finished product as of an Al/Cu/Mg/Mn alloy, comprising the following steps:

a) making an alloy which comprises:

0.3 – 0.7 wt. % silicon (Si);

maximally 0.15 wt. % iron (Fe);

3.5 – 4.5 wt. % copper (Cu);

0.1 – 0.5 wt. % manganese (Mn);

0.3 – 0.8 wt. % magnesium (Mg);

0.05 – 0.15 wt. % titanium (Ti);

0.1 – 0.25 wt. % zirconium (Zr);

0.3 – 0.7 wt. % silver (Ag);

maximally 0.05 wt. % other, individually;

maximally 0.15 wt. % other, total; and

remaining wt. % aluminum (Al);

b) casting of an ingot from the alloy;

c) homogenizing the cast ingot at a temperature, which is as close under the incipient melting temperature of the alloy as is possible, for a length of time adequate to attain maximally uniform distribution of the alloy elements in the cast structure;

d) hot working of the homogenized ingot by forging at temperatures between 320°C and 470°C;

e) solution treatment of the worked semi-finished product at temperatures sufficiently high to bring the alloy elements necessary for the hardening into solution uniformly distributed in the structure, with the solution treatment taking place in a temperature range between 490 and 505°C over a time period of 30 minutes to 5 hours;

f) quenching the solution-treated semi-finished product either in water at a maximum temperature of 100°C or in a mixture of water and glycol at a temperature lower than or equal to 50°C; and

g) artificial ageing of the quenched semi-finished product at temperatures between 170 and 210°C over a period of time of 5 hours to 35 hours.

27. (new) A method for the production of a semi-finished product as of an Al/Cu/Mg/Mn alloy, comprising the following steps:

a) making an alloy which comprises:

0.3 – 0.7 wt. % silicon (Si);

maximally 0.15 wt. % iron (Fe);

3.5 – 4.5 wt. % copper (Cu);

0.1 – 0.5 wt. % manganese (Mn);

0.3 – 0.8 wt. % magnesium (Mg);

0.05 – 0.15 wt. % titanium (Ti);

0.1 – 0.25 wt. % zirconium (Zr);

0.3 – 0.7 wt. % silver (Ag);

maximally 0.05 wt. % other, individually;

maximally 0.15 wt. % other, total; and  
remaining wt. % aluminum (Al);

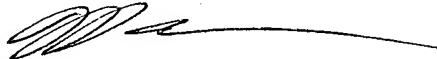
- b) casting of an ingot from the alloy;
- c) homogenizing the cast ingot at a temperature, which is as close under the incipient melting temperature of the alloy as is possible, for a length of time adequate to attain maximally uniform distribution of the alloy elements in the cast structure;
- d) hot working of the homogenized ingot by rolling at temperatures between 320°C and 470°C;
- e) solution treatment of the worked semi-finished product at temperatures sufficiently high to bring the alloy elements necessary for the hardening into solution uniformly distributed in the structure, with the solution treatment taking place in a temperature range between 490 and 505°C over a time period of 30 minutes to 5 hours;
- f) quenching the solution-treated semi-finished product either in water at a maximum temperature of 100°C or in a mixture of water and glycol at a temperature lower than or equal to 50°C; and
- g) artificial ageing of the quenched semi-finished product at temperatures between 170 and 210°C over a period of time of 5 hours to 35 hours.

28. (new) The method as claimed in one of claims 26 or 27, wherein between the step of quenching and the step of artificial ageing a cold-working step is provided, in which the quenched semi-finished product is upset or drawn out by an amount between 1 and 5% in order to reduce the intrinsic stresses.

29. (new) Method as claimed in claim 26 or 27, wherein the step of artificial ageing is carried out over a time period of 10 and 25 hours.

The Examiner is respectfully requested to pass this application to issue.

Respectfully Submitted,



Date: 7/12/04

Margaret Polson  
Reg. No. 42,082  
Patent Law Offices of Rick Martin, P.C.  
416 Coffman Street  
Longmont, CO 80501